



October 13, 2016

Meagan E. Ormand Golder Associates Inc. 2108 W. Laburnum Ave. Suite 200 Richmond, VA 23227

RE: Project: Bremo Monthly Process Pace Project No.: 92315735

Dear Meagan Ormand:

Enclosed are the analytical results for sample(s) received by the laboratory on October 12, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Nicole Gasiorowski

Micolo Lassorouske

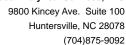
nicole.gasiorowski@pacelabs.com

Project Manager

Enclosures

cc: Ron DiFrancesco, Golder Associates Inc. Arielle Green, Golder Associates Inc. Martha Smith, Golder Associates Inc. Mike Williams, Golder Associates Inc







CERTIFICATIONS

Project: Bremo Monthly Process

Pace Project No.: 92315735

Ormond Beach Certification IDs

8 East Tower Circle, Ormond Beach, FL 32174

Alabama Certification #: 41320 Connecticut Certification #: PH-0216

Delaware Certification: FL NELAC Reciprocity

Florida Certification #: E83079 Georgia Certification #: 955

Guam Certification: FL NELAC Reciprocity Hawaii Certification: FL NELAC Reciprocity

Illinois Certification #: 200068

Indiana Certification: FL NELAC Reciprocity

Kansas Certification #: E-10383

Louisiana Certification #: FL NELAC Reciprocity Louisiana Environmental Certificate #: 05007

Maryland Certification: #346 Michigan Certification #: 9911

Mississippi Certification: FL NELAC Reciprocity

Missouri Certification #: 236 Montana Certification #: Cert 0074 Nebraska Certification: NE-OS-28-14

Nevada Certification: FL NELAC Reciprocity

New York Certification #: 11608

North Carolina Environmental Certificate #: 667

North Carolina Certification #: 12710
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity

US Virgin Islands Certification: FL NELAC Reciprocity Virginia Environmental Certification #: 460165

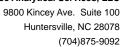
Wyoming Certification: FL NELAC Reciprocity

West Virginia Certification #: 9962C Wisconsin Certification #: 399079670

Wyoming (EPA Region 8): FL NELAC Reciprocity

Eden Certification IDs

205 East Meadow Road Suite A, Eden, NC 27288 North Carolina Drinking Water Certification #: 37738 North Carolina Wastewater Certification #: 633 Virginia/VELAP Certification #: 460025





SAMPLE ANALYTE COUNT

Project: Bremo Monthly Process

Pace Project No.: 92315735

				Analytes	
Lab ID	Sample ID	Method	Analysts	Reported	Laboratory ———
92315735001	T3-161011-1548-S3	ASTM D4282-02	KCE	1	PASI-E
		EPA 200.7	CKJ	8	PASI-O





PROJECT NARRATIVE

Project: Bremo Monthly Process

Pace Project No.: 92315735

Method: ASTM D4282-02 Description: Cyanide, Free

Client: Golder_Dominion_Bremo

Date: October 13, 2016

General Information:

1 sample was analyzed for ASTM D4282-02. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

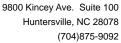
Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:





PROJECT NARRATIVE

Project: Bremo Monthly Process

Pace Project No.: 92315735

Method: EPA 200.7

Description: 200.7 MET ICP

Client: Golder_Dominion_Bremo

Date: October 13, 2016

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

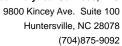
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.





ANALYTICAL RESULTS

Project: Bremo Monthly Process

Pace Project No.: 92315735

Date: 10/13/2016 06:10 PM

Sample: T3-161011-1548-S3	Lab ID: 923	15735001	Collected: 10/11/1	6 15:48	Received: 10)/12/16 14:18	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Cyanide, Free	Analytical Meth	od: ASTM	D4282-02					
Cyanide, Free	ND	mg/L	0.050	1		10/13/16 10:00	0 57-12-5	
200.7 MET ICP	Analytical Meth	od: EPA 20	0.7 Preparation Me	thod: El	PA 200.7			
Aluminum	174	ug/L	100	1	10/13/16 12:36	10/13/16 16:30	0 7429-90-5	
Barium	452	ug/L	10.0	1	10/13/16 12:36	10/13/16 16:30	0 7440-39-3	
Beryllium	ND	ug/L	1.0	1	10/13/16 12:36	10/13/16 16:30	0 7440-41-7	
Boron	1560	ug/L	50.0	1	10/13/16 12:36	10/13/16 16:30	0 7440-42-8	
Cobalt	ND	ug/L	10.0	1	10/13/16 12:36	10/13/16 16:30	0 7440-48-4	
Iron	ND	ug/L	250	1	10/13/16 12:36	10/13/16 16:30	0 7439-89-6	
Molybdenum	202	ug/L	10.0	1	10/13/16 12:36	10/13/16 16:30	0 7439-98-7	
Vanadium	ND	ug/L	10.0	1	10/13/16 12:36	10/13/16 16:30	0 7440-62-2	



QUALITY CONTROL DATA

Project: Bremo Monthly Process

Pace Project No.: 92315735

Date: 10/13/2016 06:10 PM

QC Batch: 333093 Analysis Method: ASTM D4282-02

QC Batch Method: ASTM D4282-02 Analysis Description: ASTM D4282 Free Cyanide

Associated Lab Samples: 92315735001

METHOD BLANK: 1845937 Matrix: Water

Associated Lab Samples: 92315735001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Cyanide, Free mg/L ND 0.050 10/13/16 10:00

LABORATORY CONTROL SAMPLE: 1845938

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Cyanide, Free mg/L 0.11 106 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1845939 1845940

MS MSD 92315735001 Spike Spike MS MSD MS MSD % Rec Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD Qual Cyanide, Free ND 90-110 mg/L .1 .1 0.11 0.11 106 106 0

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL DATA

Project: Bremo Monthly Process

Pace Project No.: 92315735

Date: 10/13/2016 06:10 PM

QC Batch: 325732 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET

Associated Lab Samples: 92315735001

METHOD BLANK: 1737866 Matrix: Water

Associated Lab Samples: 92315735001

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	100	10/13/16 16:09	_
Barium	ug/L	ND	10.0	10/13/16 16:09	
Beryllium	ug/L	ND	1.0	10/13/16 16:09	
Boron	ug/L	ND	50.0	10/13/16 16:09	
Cobalt	ug/L	ND	10.0	10/13/16 16:09	
Iron	ug/L	ND	250	10/13/16 16:09	
Molybdenum	ug/L	ND	10.0	10/13/16 16:09	
Vanadium	ug/L	ND	10.0	10/13/16 16:09	

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	2500	2560	102	85-115	
Barium	ug/L	250	258	103	85-115	
Beryllium	ug/L	25	27.1	108	85-115	
Boron	ug/L	2500	2550	102	85-115	
Cobalt	ug/L	250	267	107	85-115	
Iron	ug/L	2500	2660	107	85-115	
Molybdenum	ug/L	250	257	103	85-115	
Vanadium	ug/L	250	262	105	85-115	

MATRIX SPIKE & MATRIX SPI	KE DUPLICAT	E: 17378	68		1737869						
			MS	MSD							
	923	315722001	Spike	Spike	MS	MSD	MS	MSD	% Rec		
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	Qual
Aluminum	ug/L	164	2500	2500	2710	2740	102	103	70-130	1	
Barium	ug/L	454	250	250	704	702	100	99	70-130	0	
Beryllium	ug/L	ND	25	25	26.8	26.8	107	107	70-130	0	
Boron	ug/L	1540	2500	2500	4120	4110	103	103	70-130	0	
Cobalt	ug/L	ND	250	250	262	258	105	103	70-130	1	
Iron	ug/L	ND	2500	2500	2710	2730	105	106	70-130	1	
Molybdenum	ug/L	204	250	250	456	450	101	99	70-130	1	
Vanadium	ug/L	ND	250	250	269	267	105	104	70-130	1	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

(704)875-9092



QUALIFIERS

Project: Bremo Monthly Process

Pace Project No.: 92315735

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

Date: 10/13/2016 06:10 PM

PASI-E Pace Analytical Services - Eden

PASI-O Pace Analytical Services - Ormond Beach





QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Bremo Monthly Process

Pace Project No.: 92315735

Date: 10/13/2016 06:10 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92315735001	T3-161011-1548-S3	ASTM D4282-02	333093		
92315735001	T3-161011-1548-S3	EPA 200.7	325732	EPA 200.7	325746
92315735001	T3-161011-1548-S3	EPA 200.8	325739	EPA 200.8	325745

Pace Analytical[®]

Document Name:

Sample Condition Upon Receipt(SCUR)

Document No.: F-MEC-CS-009-Rev.03 Document Revised: May 24, 2016

Page 1 of 2

Issuing Authority: Pace Mechanicsville Quality Office

				Page 2 of 2 for Internal Use ONLY
Sample Condition Upon Client Name:				Project #: WO#: 92315735
	Пис			
Courier:	□usi □oth			Client 92315735
Custody Seal Present? Yes No Seals	Intact?	☑Y	es [No 12 14
Packing Material: Bubble Wrap	ble Bags		lone	Date/Initials Person Examining Contents: 10-12-14
Packing Material: Bubble Wrap Bubble Wrap Thermometer:	Die bags			Blue None Samples on ice, cooling process has begun
X RMD001 □	Type o		₩et	
Correction Factor: 0.0°C Cooler Temp Corrected (°C) Temp should be above freezing to 6°C	:O_	ا. لو		Biological Tissue Frozen? Yes No N/A
USDA Regulated Soil (N/A, water sample)				
Did samples originate in a quarantine zone within the United	States: CA	, NY, or	SC (check	
Yes No	-			including Hawaii and Puerto Rico)? Yes No Comments/Discrepancy:
Chain of Custody Present?	Yes	□No	□N/A	1.
Samples Arrived within Hold Time?	Yes	□,No	□N/A	2.
Short Hold Time Analysis (<72 hr.)?	□yes	No	□N/A	3.
Rush Turn Around Time Requested?	Yes	□No	- □N/A	4.
Sufficient Volume?	Yes	□No	□N/A	5.
Correct Containers Used?	Yes	□No	□N/A	6.
-Pace Containers Used?	Yes	□No	□N/A	0.
Containers Intact?	Yes	□No	□N/A	7.
Samples Field Filtered?	Yes	□No	N/A N/A	8. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	Yes	□No	□N/A	9.
	Miles	Пио	١١١/٨	5.
-Includes Date/Time/ID/Analysis Matrix: \(\)\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				10. _{HNC3 pH<2}
checked?	Yes	□No	□N/A	на рнх2
All containers needing preservation are found to be in compliance with EPA recommendation?	1	•		H25O4 pH<2
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	Yes	□No	□N/A	NaOH pH>12
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC,LLHg	□Yes	□No	ØN/A	NaOH/ZnOAc pH>9
Samples checked for dechlorination?	Yes	□No	N/A	11.
Headspace in VOA Vials (>5-6mm)?	□Yes	□No	DIN/A	12.
Trip Blank Present?	Yes	□No	M/A	13.
Trip Blank Custody Seals Present?	Yes	□No	MN/A	,
Pace Trip Blank Lot # (if purchased):		(1) (m) (m) (m) (m) (m) (m) (m) (m) (m) (m		
CLIENT NOTIFICATION/RESOLUTION			20	Field Data Required? Yes No
Person Contacted:				Date/Time:
Comments/Sample				Date, fine.
Discrepancy:				
*				
		n I	MG	Date: (6/13/16
Project Manager SCURF Review:		10	1119	Date: (0 (3/16
Project Manager SRF Review:	1		Vm6	Date: (6/13/16
Note: Whenever there is a discrepancy affecting North Carolina Out of hold, incorrect preservative, out of temp, incorrect contains		e sampl	es, a copy	of this form will be sent to the North Carolina DEHNR Certification Office (i.e.



CHAIN-OF-CUSTOD: / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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					ses to be performed u	ADDITIONA												T3-	SAMPLE ID (A-Z, 0-91 r.) Sample IDs MUST BE UNIQUE	Section D		Requested Due Date/TAT:	804-551-0129	Mormand@golder.com	Richmond,VA 23227	2108 W Lab	Golder Associates	Section A Required Client Information:
					All analyses to be performed under Golder-Pace MSA dated 12/19/2008	ADDITIONAL COMMENTS												3-161011-1548-5	UNIQUE			P 3-Duy	Fax: 804-358-2900	older.com	A 23227	2108 W Laburnum Ave, Ste 200	siates	
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